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Barron's Revised Ego-Strength Scale as a Measure of Test Taking Style: Relationships with the Validity Scales of the MMPI-2

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ABSTRACT - Relationships between the Barron revised Ego-Strength (Es) Scale and selected validity scales of the Minnesota Multiphasic Personality Inventory-2 (MMPI-2) were examined in terms of zero-order correlations, multiple partial correlations, factor analysis, and discriminant analysis. The participants were 259 individuals from a state correctional system. The fundamental aim was to ascertain whether or not low scores on the Es represent a hypothesized test taking style related to faking bad. The data yielded support for this notion and also suggested that higher Es scores may relate to social desirability or fake good responding.

Keywords:
MMPI-2; Ego-strength;
Assessment; Test-taking style; Validity scales

Introduction

The Ego-Strength scale (Es: Barron, 1953) was originally developed as one of the few assessment instruments dealing with positive components of psychological and physical functioning associated with the Minnesota Multiphasic Personality Inventory (MMPI). Since its inception and subsequent validation research (e.g., Barron, 1968; Frank, 1967), there have been two major events that affect views as to what the Es purports to measure. First, there was a reformulation regarding the meaning of low Es scores. Whereas elevated Es scores were viewed

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as an indication of positive adjustment, low scores were interpreted as a denial or minimization of positive functioning possibly indicating "fake bad" inclinations (Caldwell, 1988). Second, with the advent of the Minnesota Multiphasic Personality Inventory-2 (MMPI-2; Butcher et al., 1989) there was a revision of the Es scale with a deletion of sixteen of the 68 original items and a rewording of five additional items. These changes led Butcher (1990), to suggest a need for Es Scale revalidation. Subsequently in a psychometric study by Schuldberg (1992), similar characteristics for the original and revised Es Scales were reported together with somewhat stronger criterion validity coefficients for the revised instrument.

Although Graham (1990) and Butcher (1990) note the association between low Es scores and excessive symptom endorsement, the only empirical investigations on the topic have come from Lees-Haley and associates. For example, ego strength denial (i.e. low Es scores) significantly differentiated personal injury malingerers from nonmalingerers (Lees-Haley, 1991). Grillo et al. (1994) found relationships between the Es Scale and measured personality disorders consistent with the "fake bad" notion. Finally, Lees-Haley (1997) reported a zero-order correlation of $-.60$ between scores on the Es Scale and the F (Frequency) scale of the MMPI-2, the F Scale being the traditional "fake bad" measure of the MMPI. The current study was formulated to evaluate further the revised Es Scale as an indicator of a test taking style.

Method

Participants

The participants were 259 individuals (144 males; 115 females) referred to state vocational rehabilitation services from the correctional system. Their mean age was 34.77 years old ($SD=9.95$).

Measures

As part of a standard assessment battery, the participants were administered the MMPI-2, the Wechsler Adult Intelligence Scale-Revised (WAIS-R) (Wechsler, 1981), and the Reading Subtest of the Wide Range Achievement Test-Revised (WRAT-R) (Jastak & Wilkinson, 1984).

MMPI-2 Validity Scales. The MMPI-2 (Butcher et al., 1989) validity scales used in this investigation included the Infrequency (F) Scale, composed of 60 items that purport to assess deviant or atypical responding, including "fake bad" propensities (Graham, 2000). The Infrequency back (Fb) scale is composed of 40 items purportedly measuring deviant or atypical responding on the second half of the test. The Lie (L) scale consists of 15 items that apparently measure deliberate, blatant "fake good" inclinations. The Correction (K) scale reportedly measures more subtle attempts (in comparison to L) to present oneself in a favorable light, or to "fake good." It is composed of 30 items. Further technical information on the MMPI-2 validity and content scales together with extensive validation research findings can be found in Graham (2000) and in the administration and scoring manual (Butcher, et al., 1989).

WAIS-R. As a measure of general and specific intellectual functioning, the WAIS-R (Wechsler, 1981) evinces elevated reliability and validity coefficients. Technical data for the WAIS-R are reported in the test manual (Wechsler, 1981).

WRAT-R Reading Scale. Analogous data for the 47 item WRAT-R Reading Scale (Jastak & Wilkinson, 1984), a test of letter and word recognition, are sufficiently elevated for research purposes (see Jastak & Wilkinson, 1984).

Procedure

The participants were given diagnostic classifications by state licensed clinical psychologists and counselors, based on rules of the 4th edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV, American Psychiatric Association, 1994). Relationships between Es and the traditional validity scales of the MMPI-2 were computed. Also conducted were curve-fitting procedures regarding possible non-linear relationships between the scales. Further to elucidate relationships, we computed multiple partial correlations and conducted exploratory and confirmatory factor analyses of the Es and the validity scales. Two discriminant analyses were then conducted vis-a-vis psychiatric classifications of the research participants, one with the validity scales and Es alone, the other involving these scales and the MMPI-2 clinical scales.

Results and Discussion

The mean Full Scale IQ was 95.52 ($SD = 12.25$); the mean Reading standard score was 96.67 ($SD = 14.04$). As a group then, the participants evinced average general intelligence and average reading achievement. The means for all MMPI-2 clinical scales were within normal limits (i.e., below a T score of 65). The average T scores for the validity scales were within the normal range except for mild elevations on F ($M = 66.19$) and Fb ($M = 67.49$). The most frequent psychiatric diagnoses (made by state licensed mental health professionals) from the fourth edition of the Diagnostic and Statistical Manual (American Psychiatric Association, 1994) were alcohol abuse (33%) and major depression (28%).

Table 1: Descriptive statistics

Scale	<i>M</i>	<i>SD</i>	Skewness	Kurtosis
Ego-strength (Es)	39.89	10.13	0.82	-0.33
Frequency-back (Fb)	67.49	21.27	0.77	0.37
Correction (K)	44.73	10.12	0.49	-0.45
Infrequency (F)	66.19	18.47	0.86	0.23
Lie (L)	53.02	10.59	0.91	1.35

Descriptive data for Es and the validity scales are presented in Table 1. Significant inverse correlations obtained between Es and the F (-.576) and Fb (-.546) scales. Positive correlations were found for the L (.252) and K (.598) scales. These relationships were significant ($p < .01$) and in the expected direction (see Table 2). A polynomial regression analysis for Es on F indicated that the quadratic term accounted for an additional 5% of the variance ($Beta = 2.06$, $t(256) = 4.78$, $p < .0001$). The upward, curvilinear regression line becomes more positive at higher Es levels (i.e., T scores of 60 and above).

Table 2: Zero-order and multiple partial correlations for Es

Scale	Zero-Order	Partial
Frequency-back (Fb)	-.546*	-.096
Correction (K)	.598*	.371*
Infrequency (F)	-.576*	-.246*
Lie (L)	.252*	-.073

Note: Es = Ego-Strength Scale. All correlations greater than .24 are significant, * $p < .01$.

Table 3: Structure coefficients and F ratios

Scale	Coefficient	F Ratio
Hypochondriasis (Hs)	-.675	38.90*
Depression (D)	-.642	35.24*
Psychasthenia (Pt)	-.636	34.52*
Schizophrenia (Sc)	-.605	31.21*
Ego-strength (Es)	.491	20.56*
Hysteria (Hy)	-.470	18.89*
Paranoia (Pa)	-.377	12.16*
Frequency-back (Fb)	-.366	11.41*
MacAndrew (MAC-R)	.318	8.62*
Social introversion (Si)	-.308	8.13*
Frequency (F)	-.281	6.73
Correction (K)	.263	5.89
Psychopathic deviate (Pd)	-.239	4.87
Masculinity-femininity (Mf)	.154	2.03
Hypomania (Ma)	-.068	0.40
Lie (L)	.045	0.10

Note. All F Ratios above 8 are significant, * $p < .005$. Centroid for alcohol abuse group = .685. Centroid for Depressed group = -.765.

The multiple partial correlations are also presented in Table 2. They indicate that the Es scale shares essentially no variance with Fb (-.096) and L (-.073) when the other validity indicators of the MMPI-2 (K and F) are statistically controlled. It is also noteworthy that the elevated zero-order correlation between Es and F was reduced to -.246 (controlling for Fb, L, and K), whereas the relationship between Es and K (.371) remained comparatively high with the partialling of the F, Fb, and L. Next, the validity scales of the MMPI-2 and Es were intercorrelated and subjected to an exploratory factor analysis (principal axis, varimax rotation). The analysis indicated a unitary factor. This single factor structure was confirmed through the maximum likelihood procedure, $\chi^2(3) = 3.48$, $p = .32$; Goodness of Fit Index = .995; Adjusted goodness of Fit Index = .974; root

Mean Square Error of Approximation = .025). The obtained factor loadings were as follows: L = .340; F = -.861; K = .658; Fb = -.867; Es = .651.

A discriminant analysis was conducted between participants classified as depressed ($N = 77$) or as having abused alcohol ($N = 86$). The MMPI-2 validity scales and Es were the independent variables. This yielded a canonical correlation of .360 and a Wilks' Lambda of .871 ($\chi^2(5) = 21.95$, $p < .001$). The centroid for the depressed group was -.405; the corresponding value for the alcohol abuse group was .362. Es emerged as the primary discriminating variable with a structure coefficient of .927, followed by Fb (-.679), F (-.531), K (.496), and L (.066). Persons diagnosed as depressed obtained a mean Fb score of 75.64 while those diagnosed with alcohol abuse obtained a mean of 64.81 ($t(161) = 4.53$, $p < .0001$).

A second discriminant analysis included Es and the validity and clinical scales of the MMPI-2. In addition, the MacAndrew Scale-Revised, purportedly sensitive to alcohol abuse, was included as an independent variable (see Graham, 1993). The obtained canonical correlation was .589 (Wilks' Lambda = .653, $\chi^2(16) = 65.10$, $p < .0001$). Centroids for the depressed and alcohol abuse groups were .685 and -.765 respectively. The highest structure coefficients were obtained by clinical scales of the MMPI-2 that are associated with negative affectivity and helplessness (Hypochondriasis, Depression, and Psychasthenia). Among the non-clinical scales only Es and Fb obtained significant structure coefficients of .491 and -.366 respectively (see Table 3).

Based on these findings, it can be said with some assurance that Es measures something in common with the traditional validity scales of the MMPI-2 (e.g., the unitary factor structure). It is possible that earlier formulations of ego strength denial, exaggeration of symptoms, and fake bad propensities are appropriate appellations for lower Es scores. However, the relationship between Es and the traditional fake bad scale of the MMPI, the F scale, appears to be somewhat complicated involving both linear and quadratic components. Since Es shares little distinctive variance with Fb, it may effectively contrast with Fb relative to detecting persons who feign psychopathology. It should be noted in this regard that Fb contains items that are especially conducive to faking bad in relation to depressed symptoms (Bagby et al., 1997). The contrast with Fb and the relationship between Es and K suggests that higher Es scores may reflect a test taking style characterized by social desirability or faking good. Future research should investigate the effects on Es when participants are instructed to malingering mental illness or to respond in a socially desirable manner.

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